Massachusetts Department of Environmental Protection
Source Water Assessment and Protection (SWAP) Report
for

Quabbin Administration Building

What is SWAP?

The Source Water Assessment and Protection (SWAP) program, established under the federal Safe Drinking Water Act, requires every state to:

- inventory land uses within the recharge areas of all public water supply sources;
- assess the susceptibility of drinking water sources to contamination from these land uses; and
- publicize the results to provide support for improved protection.

Susceptibility and Water Quality

Susceptibility is a measure of a water supply's potential to become contaminated due to land uses and activities within its recharge area.

A source's susceptibility to contamination does *not* imply poor water quality.

Water suppliers protect drinking water by monitoring for more than 100 chemicals, disinfecting, filtering, or treating water supplies, and using source protection measures to ensure that safe water is delivered to the tap.

Actual water quality is best reflected by the results of regular water tests. To learn more about your water quality, refer to your water supplier's annual Consumer Confidence Reports.

Table 1: Public Water System Information

PWS Name	Quabbin Administration Building
PWS Address	485 Ware Road
City/Town	Belchertown
PWS ID Number	1024011
Local Contact	William Pula
Phone Number	(413) 784-1750

Introduction

We are all concerned about the quality of the water we drink. Drinking water wells may be threatened by many potential contaminant sources, including storm runoff, road salting, and improper disposal of hazardous materials. Citizens and local officials can work together to better protect these drinking water sources.

Purpose of this report:
This report is a planning tool to support local and state efforts to improve water supply protection. By identifying land uses within water supply protection areas that may be potential sources of contamination, the assessment helps focus protection efforts on appropriate Best Management Practices (BMPs) and drinking water source protection measures.

Refer to Section 3 for recommendations to address potential sources of contamination. Department of Environmental Protection (DEP) staff are available to provide information about funding and other resources that may be available to your community.

This report includes the following sections:

1. Description of the Water System
2. Land Uses in the Protection Areas
3. Protection Recommendations
4. Attachments

Section 1: Description of the Water System

Susceptibility: High

Well Names	*Source IDs*
Well No. 1	1024011-01G

The Quabbin Administration Building is located in Belchertown, western/central Massachusetts, immediately adjacent to the Quabbin Reservoir. There is no municipal water supply available or municipal wastewater disposal available at the site, therefore, the facility is served by one on-site groundwater source and on-site septic disposal. The well is a 6-inch diameter bedrock well, 130 feet deep and serves a population of approximately 80 people per day.

Well No. 1 is located along the south shore of the Quabbin Reservoir in Belchertown, Massachusetts inside the hangar facility in the paint shop. Geologic maps indicate thin overburden material on the uplands with some stratified drift deposits in the lowlands along the Swift River valley. The bedrock map indicates the well is located in close proximity to contacts among, metamorphic sequences of sulfidic, mafic and pelitic schist.

The Zone I is the protected area immediately surrounding the well, while the Interim Wellhead Protection Area (IWPA) provides an interim protection area for a water supply well when the actual (Zone II) recharge area has not been delineated. The actual recharge area to the well may be significantly larger or smaller than the IWPA. The Zone I and Interim Wellhead Protection Area (IWPA) radii for this facility's well are 108 feet and 425 feet, respectively, based on historic, metered water use at the facility.

There is no evidence of a protective clay layer or a thick till layer in the vicinity of the facility. The well is located in an aquifer with a high vulnerability to contamination due to the absence of hydrogeologic barriers (i.e. clay) throughout the IWPA that can prevent contaminant migration. Please refer to the attached map to view the boundaries of the Zone I and IWPA.

Currently the well water does not receive treatment. For current information on monitoring results and treatment, please contact the Public Water System contact person listed above in Table 1. Drinking water monitoring reporting data are also available on the web at http://www.epa.gov/safewater/ccr1.html.

What is a Protection Area?

A well's water supply protection area is the land around the well where protection activities should be focused. Each well has a Zone I protective radius and an Interim Wellhead Protection Area (IWPA).

- **The Zone I** is the area that should be owned or controlled by **the** water supplier and limited to water supply activities.
- **The IWPA** is the larger area that is likely to contribute water to the well.

In many instances the IWPA does not include the entire land area that could contribute water to the well. Therefore, the well may be susceptible to contamination from activities outside of the IWPA that are not identified in this report.

What are "BMPs?"

Best Management Practices (BMPs) are measures that are used to protect and improve surface water and groundwater quality. BMPs can be structural, such as oil & grease trap catch basins, nonstructural, such as hazardous waste collection days or managerial, such as employee training on proper disposal procedures.

Section 2: Land Uses in the Protection Areas

The land uses for the IWPA for Quabbin Administration Building are predominantly related to the facility's operations. Land uses and activities that are potential sources of contamination are listed in Table 2.

Key Land Uses and Protection Issues include:

1. Non-conforming Zone I
2. Paint Shop
3. Vehicle and Boat Repair/Maintenance
4. Underground Storage Tank
5. Laboratory and Very Small Quantity Hazardous Waste Generator

The overall ranking of susceptibility to contamination for the system is high, based on the presence of at least one high threat land use within the water supply protection areas, as seen in Table 2.

1. Non-conforming Zone I – The Zone I radius for Well No. 1 is 108-feet around the well. Massachusetts drinking water regulation (310 CMR 22.00 Drinking Water) requires public water suppliers to own the Zone I, or control the Zone I through a conservation restriction and restrict the activities in the Zone I to water supply related or other non-threatening activities. Many public water supplies were developed prior to the Department's regulations and contain activities that pose a potential threat to the water supply. The following non- water supply activities occur within the Zone I:

Non-conforming Zone I: Although Quabbin Administration Building owns the entire Zone I area, the Zone I contains a portion of Windsor Dam Road, a paint shop, a garage containing diesel and gasoline powered equipment, and some parking spaces.

Zone I Recommendations:

- ✓ To the extent possible, remove all non-water supply activities from the Zone I to comply with DEP's Zone I requirements.
- ✓ Consider well relocation if Zone I threats cannot be mitigated and/or water quality is impacted by existing activities.
- ✓? Prohibit any new, non-water supply activities from Zone I.

2. Paint Shop – A paint shop is located within the Zone II. If handled improperly leaks and spills of paints and other solvents or chemicals used can potentially contaminate the water supply.

Recommendations:

- ✓ Continue to use Best Management Practices for storage, use, and disposal of paints, solvents, and other hazardous materials.

3. Vehicle and Boat Repair/Maintenance – A limited amount of vehicle maintenance occurs at the facility. If handled improperly leaks and spills of automotive fluids and cleaning solvents can potentially contaminate the water supply.

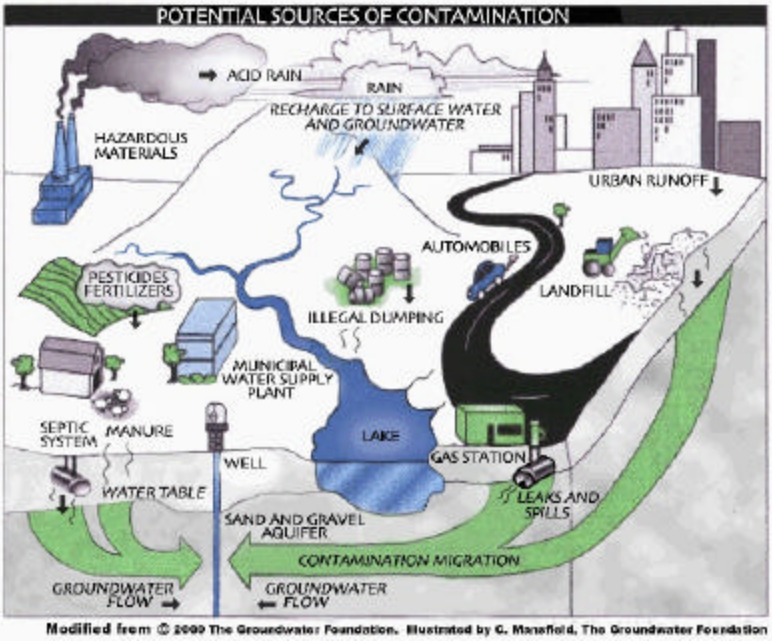
Recommendations:

- ✓ Continue to use Best Management Practices for storage, use, and disposal of paints, solvents, and other hazardous materials.

4. Underground Storage Tanks (USTs) – One 10,000 gallon UST containing No. 2 fuel oil is located within the IWPA at the facility. If managed improperly, underground storage tanks can be potential sources of contamination due to leaks or spills of the chemicals they store.

Recommendation:

- ✓ When considering the upgrade and replacement of the UST, consider an above ground tank (AST) located on an impervious surface with proper spill containment. Grant money may be available for the UST removal through the Massachusetts Department of Revenue. See the conclusions in Section 3 below for more information regarding grant/loan programs.



Glossary

Aquifer: An underground water-bearing layer of permeable material that will yield water in a usable quantity to a well.

Hydrogeologic Barrier: An underground layer of impermeable material (i.e. clay) that resists penetration by water.

Recharge Area: The surface area that contributes water to a well.

Zone I: The area closest to a well; a 100 to 400 foot radius proportional to the well's pumping rate. This area should be owned or controlled by the water supplier and limited to water supply activities.

IWPA: A 400 foot to ½ mile radius around a public water supply well proportional to its pumping rate; the area DEP recommends for protection in the absence of a defined Zone II. To determine IWPA radius, refer to the attached map.

Benefits of Source Protection

Source Protection helps protect public health and is also good for fiscal fitness:

- Protects drinking water quality at the source
- Reduces monitoring costs through the DEP Waiver Program
- Treatment can be reduced or avoided entirely, saving treatment costs
- Prevents costly contamination clean-up
- Preventing contamination saves costs on water purchases, and expensive new source development

Contact your regional DEP office for more information on Source Protection and the Waiver Program.

5. Laboratory and Very Small Quantity Hazardous Waste Generator – A laboratory at the facility is listed as a very small quantity generator of hazardous waste. The facility has appropriate permits, and they contract with a licensed hauler to remove the hazardous waste off site. Hazardous waste is a potential source of contamination if it is improperly handled or stored.

Recommendation:

✓ Continue to handle hazardous waste in compliance with regulations.

Implementing the following recommendations will reduce the system's susceptibility to contamination.

3. Protection Recommendations

Implementing protection measures and best management practices (BMPs) will reduce the well's susceptibility to contamination. Quabbin Administrative Building is commended for implementing BMPs in its paint shop and laboratory and for directing stormwater drainage away from the well. Quabbin Administrative Building should review and adopt the key recommendations above and the following:

Priority Recommendations:

✓ Regularly inspect all pathways where contaminants could enter the ground from the paint shop and the maintenance garage, including electrical conduits.

Zone I:

✓ Keep additional non-water supply activities out of the Zone I.
✓ Consider well relocation if Zone I threats cannot be mitigated and water quality is impacted by existing used .
✓ Continue to use Best Management Practices (BMPs) and restrict activities that could pose a threat to the water supply.

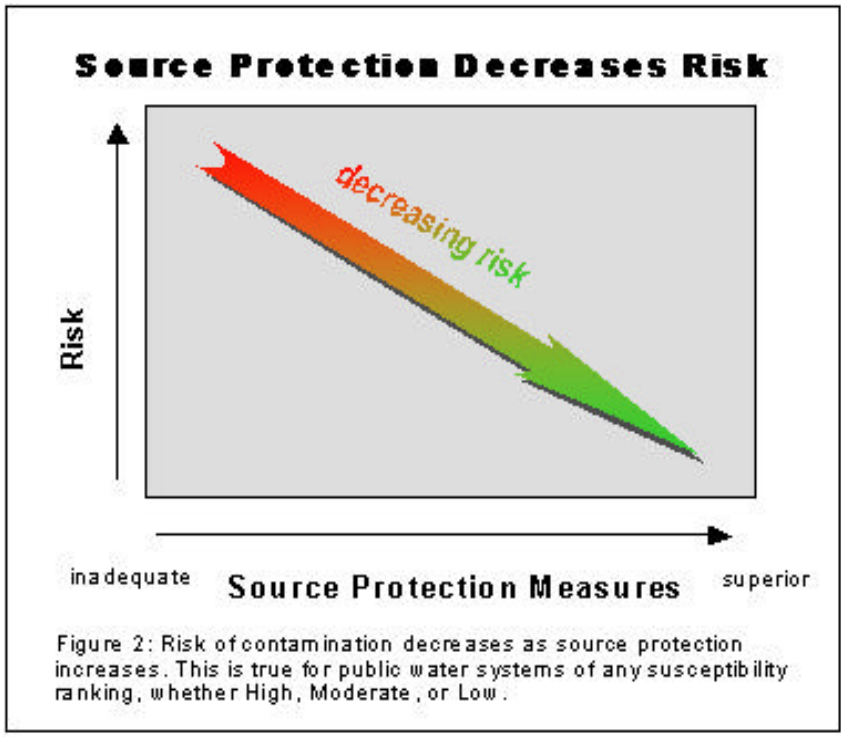


Figure 2: Risk of contamination decreases as source protection increases. This is true for public water systems of any susceptibility ranking, whether High, Moderate, or Low.

Potential Source of Contamination vs. Actual Contamination

The activities listed in Table 2 are those that typically use, produce, or store contaminants of concern, which, if managed improperly, are potential sources of contamination (PSC).

It is important to understand that a release may never occur from the potential source of contamination provided facilities are using best management practices (BMPs). If BMPs are in place, the actual risk may be lower than the threat ranking identified in Table 2. Many potential sources of contamination are regulated at the federal, state and/or local levels, to further reduce the risk.

Table 2: Land Use in the Protection Areas (Zones I and IWPA)

For more information, refer to Appendix A: Regulated Facilities within the Water Supply Protection Area

Activities	Quantity	Threat*	Potential Source of Contamination
Paint Shop	1	High	Paints, solvents, other chemicals: spills, leaks, or improper handling or storage
Laboratory	1	Moderate	Laboratory chemicals and wastes: spills, leaks, or improper handling or storage
Vehicle/Boat Repair Shop	1	High	Automotive fluids and solvents: spills, leaks, or improper handling
Underground Storage Tanks	1	High	Stored materials: spills, leaks, or improper handling
Very Small Quantity Hazardous Waste Generator	1	Low	Hazardous materials and waste: spills, leaks, or improper handling or storage
Lawn Care	1	Moderate	Pesticides: over-application or improper storage and disposal.
Septic Systems	1	Moderate	Hazardous chemicals and microbial contaminants: improper disposal.
Stormwater Drains/ Retention Basins	-	Low	Debris, pet waste, and chemicals in stormwater from roads, parking lots, and lawns.

Notes:

1. When specific potential contaminants are not known, typical potential contaminants or activities for that type of land use are listed. Facilities within the watershed may not contain all of these potential contaminant sources, may contain other potential contaminant sources, or may use Best Management Practices to prevent contaminants from reaching drinking water supplies.
2. For more information on regulated facilities, refer to Appendix A: Regulated Facilities within the Water Supply Protection Area information about these potential sources of contamination.
3. For information about Oil or Hazardous Materials Sites in your protection areas, refer to Appendix B: Tier Classified Oil and/or Hazardous Material Sites.

*** THREAT RANKING** - The rankings (high, moderate or low) represent the relative threat of each land use compared to other PSCs. The ranking of a particular PSC is based on a number of factors, including: the type and quantity of chemicals typically used or generated by the PSC; the characteristics of the contaminants (such as toxicity, environmental fate and transport); and the behavior and mobility of the pollutants in soils and groundwater.

Top 5 Reasons to Develop a Local Wellhead Protection Plan

❶ Reduces Risk to Human Health

❷ Cost Effective! Reduces or Eliminates Costs Associated With:

- Increased groundwater monitoring and treatment
- Water supply clean up and remediation
- Replacing a water supply
- Purchasing water

❸ Supports municipal bylaws, making them less likely to be challenged

❹ Ensures clean drinking water supplies for future generations

❺ Enhances real estate values – clean drinking water is a local amenity. A community known for its great drinking water in a place people want to live and businesses want to locate.

Additional Documents:

To help with source protection efforts, more information is available by request or online at mass.gov/dep/brp/dws including:

1. Water Supply Protection Guidance Materials such as model regulations, Best Management Practice information, and general water supply protection information.
2. MA DEP SWAP Strategy
3. Land Use Pollution Potential Matrix
4. Draft Land/Associated Contaminants Matrix

(Continued from page 4)

✓ Continue to keep the storage of pesticides, fertilizers and road salt outside of the Zone I.

Training and Education:

✓ Continue to train staff on proper hazardous material use, disposal, emergency response, and best management practices. Post labels as appropriate on raw materials and hazardous waste.

Facilities Management:

✓ Implement Best Management Practices (BMPs) for the use of fertilizer, herbicides and pesticides within the IWPA.

✓ Septic system components should be inspected and maintained on a regular basis.

✓ Verify that MODF in the transformers has been replaced with no-PCB oils. Keep the area near any transformer free of tree limbs that could endanger the transformer in a storm.

Funding:

The Department's Wellhead Protection Grant Program provides funds to assist public water suppliers in addressing wellhead protection through local projects. Protection recommendations discussed in this document may be eligible for funding under that program. For additional information, please refer to DEP's web site. Other funding opportunities are described in *Grant and Loan Programs: Opportunities for Watershed Protection, Planning and Implementation* at http://www.state.ma.us/dep/brp/mf/files/glprgm.pdf.

Quabbin Administrative Building management and staff should use this SWAP report to review drinking water protection measures.

4. Attachments

- Map of the Public Water Supply (PWS) Protection Areas
- Recommended Source Protection Measures Fact Sheet

For More Information

Contact Catherine Skiba in DEP's Springfield Office at (413) 755-2119 for more information and assistance on improving current protection measures.

Copies of this report have been provided to the public water supplier, board of health, and the town.